

PROCEDURE 1310.39
Issued: February 12, 2002
Effective Date: March 12, 2002

SUBJECT: Interactive Voice Response (IVR) Systems

APPLICATION: Executive Branch Departments and Sub-units

PURPOSE: This standard establishes functional requirements and specifications for Interactive Voice Response systems.

CONTACT
AGENCY: Department of Information Technology (DIT)
Office of Strategic Policy

TELEPHONE: 517/373-7326

FAX: 517/335-2355

SUMMARY: The objectives of this standard are to:

- Assure that agency IVR systems will integrate with the existing telephony and network infrastructure
- Maintain consistency across agencies with the existing technology platforms
- Provide opportunities to capitalize on existing telephony and network investments

APPLICABLE FORMS: None

PROCEDURES:

General Information: The Interactive Voice Response (IVR) business drivers include the following:

1. Quality customer service
 - 24x7 phone access
 - Self service
 - FAQ self service
 - Consistent menu for voice applications
 - Consistency with web interface for new applications
 - Quality provision of information
 - Cost effective channel for access to agencies
2. Streamline operational costs
 - Ease of construction & maintenance
 - Single set of business logic for all channels
 - Better use of infrastructure resources (limited segmentation)
 - Consolidate technical human resources
 - Redeployment of human resources
 - Economies of scale
 - Lower cost services for citizens
3. Additional partnering opportunities
 - Potential to host local government services on our infrastructure
 - Potential to host educational entities' services on our infrastructure

Functionality:

An Interactive Voice Response system must be able to provide the following functionality:

- **Call answering and routing**
The IVR system answers a call and callers then select a menu item to direct their own call.
- **Information retrieval from a database via telephone or internet via web interface**
The caller accesses requested database records using telephone keypad or a website.
- **Touch-tone and voice data input**
A caller uses DTMF keypad tones or “natural” voice speech for inputting data.
- **Text-to-speech capabilities**
The system artificially generates spoken words from textual information.
- **Voice recognition**
The system identifies a particular person’s voice.
- **Speech recognition**
The IVR system’s ability to understand human “natural” speech.
- **Fax back confirmation and information fulfillment**
Allows callers to request and receive by fax requested documents 24 x 7.
- **Voice forms for short voice messages**
Callers verbally respond to recorded questions. The answers are stored for later transcription.

To address the need for single-function IVR implementations that do not require the full functionality described above, this standard identifies two functional thresholds:

Enterprise IVR System

Multi-function box; access to external databases

Stand-alone IVR System

Single-function box; access only to internal database; only connects to voice network

Functional Specifications:

The specification for each functional threshold is illustrated below.

	Stand-alone IVR System	Enterprise IVR System
Scalable	<ul style="list-style-type: none"> • Upgradable • Scalable (support low and high levels of call volume) 	<ul style="list-style-type: none"> • Upgradable • Scalable by ports (analog, digital, ISDN) • Capacity to increase memory • Ability to add disks
Administration	<ul style="list-style-type: none"> • Minimal administrative capabilities <ul style="list-style-type: none"> — Low maintenance — Easy to maintain • Procedures for change management, testing, and problem resolution • Ability for remote secured access 	<ul style="list-style-type: none"> • Manageable by internal staff or, if chosen, outsourced • Determined by “cost of management” • Secured access, if outsourced • “User friendly” administration – GUI, click and drag • Easily modifiable/script changes, etc. by internal staff • Procedures for change management, testing, and problem resolution
Interoperability	<ul style="list-style-type: none"> • Integrate with State of Michigan telephony, data and information systems 	<ul style="list-style-type: none"> • Provide access and control to multiple State of Michigan hosts, databases, networks, and telephony interfaces • Integrate with State of Michigan telephony, data and information systems • VoiceXML • TSAPI • Website integration
Purchase	<ul style="list-style-type: none"> • Available through full purchase or flexible leasing programs • GSA pricing or best value pricing 	<ul style="list-style-type: none"> • Available through full purchase or flexible leasing programs • GSA pricing or best value pricing
Maintenance	<ul style="list-style-type: none"> • 24x7 vendor maintenance availability 	<ul style="list-style-type: none"> • 24x7 vendor maintenance, availability • One contact and local service/support • Written and approved service level agreement • Reliable 99.9% uptime (critical system)

System (Hardware and Software)	<ul style="list-style-type: none"> • American Disabilities Act (ADA) Compliance for Section 508 • System operational 24x7 • Application may or may not reside on the system • Single/dual function system • Call queuing • Single language application • Touch tone recognition only • Analog and digital port capacity • Compatible with State of Michigan electronic payment system if used to accept payments 	<ul style="list-style-type: none"> • American Disabilities Act (ADA) Compliance for Section 508 • System operational 24x7 • Application may or may not reside on the system • Multi-tier – voice and data integration CTI, TCP/IP, call center, Voice over IP, • Capable of accepting multiple IP addresses • Voice module – text to speech, speech to text, multiple languages, both “natural” speech and key work speech, TTD-TTY compatible • Capability of more than one application on a “box” administered separately - each can be taken down for maintenance/ upgraded without affecting other applications • Applications can be in-bound or out-going • Operable at multiple locations • Compatible with State of Michigan electronic payment system • Hot swappable parts
Redundancy/ Disaster Recovery	<ul style="list-style-type: none"> • Disaster recovery features • Ability to backup data; offline backups are sufficient 	<ul style="list-style-type: none"> • Disaster recovery features • Capability of on-line back-ups • Redundancy in case of hot site catastrophe • Business continuity considerations • Dual power supply • Minimal single point of failure

Warranty/Support	<ul style="list-style-type: none"> • User and manager training and support • System warranty • System documentation, minimally include the following: <ul style="list-style-type: none"> — Hardware specifications including support information — Software specifications — Operating system, including licensing and support information — Other “out-of-the-box” software, including licensing and support information — Custom coded application software owned by State of Michigan, including data flow diagram and/or text description • User interface documentation, minimally include the following: <ul style="list-style-type: none"> — Complete “how to” guide on how a user would access and use the system • Administration documentation, minimally include the following: <ul style="list-style-type: none"> — Complete “how to” guide for system administration • Any troubleshooting and support information 	<ul style="list-style-type: none"> • User and manager training and support • System warranty • System documentation, minimally include the following: <ul style="list-style-type: none"> — Hardware specifications including support information — Software specifications — Operating system, including licensing and support information — Other “out-of-the-box” software, including licensing and support information — Custom coded application software owned by State of Michigan, including data flow diagram and/or text description • User interface documentation, minimally include the following: <ul style="list-style-type: none"> — Complete “how to” guide on how a user would access and use the system • Administration documentation, minimally include the following: <ul style="list-style-type: none"> — Complete “how to” guide for system administration — Any troubleshooting and support information
Reports	<ul style="list-style-type: none"> • Basic reporting features including but not limited to; system usage-calls, hits, etc. • Ability to download raw statistical data 	<ul style="list-style-type: none"> • Real time and historical reporting capabilities for all phases of the application operation <ul style="list-style-type: none"> — Call detail-how many calls and minutes both incoming and outgoing — Daily, weekly, monthly reporting — Utilization by menu items — Time of day analysis — Fax utilization — On-screen viewing option (or browser-based option) • Custom reports – by customer entered account numbers, etc. • Ability to obtain reports while the IVR is still processing calls and faxes • Ability to download raw statistical data
Monitoring	<ul style="list-style-type: none"> • Accept and work with Enterprise Computing Services’ monitoring software (CA Unicenter) 	<ul style="list-style-type: none"> • Accept and work with Enterprise Computing Services’ monitoring software (CA Unicenter) • Monitoring and alarm system for each point of failure in the application including hardware, software, telecommunications, etc. • 24x7 monitoring capabilities
Testing	<ul style="list-style-type: none"> • Development environment 	<ul style="list-style-type: none"> • Testing in an off-line development environment

Security	<ul style="list-style-type: none"> • Compliance with State security standards 	<ul style="list-style-type: none"> • Compliance with State security standards • Compliance with Enterprise Computing Services policies of operation • Administrative security features • Password protection
State Standards	<ul style="list-style-type: none"> • Compliance with all applicable State standards 	<ul style="list-style-type: none"> • Compliance with all applicable State standards including PBX, data switches, routers, fax gateway, email systems, etc. • Compatible with State development standards • Application is intellectual property of the State

Standards: Standards that have been identified as particularly relevant to the IVR standard are listed below. This list is not all-inclusive for each particular IVR implementation and the full list of standards should be reviewed periodically for additions and updates.

Key Standards	Stand-alone IVR System	Enterprise IVR System
1300 Information Standards & Planning		
1310.07 Systems Development Lifecycle	X	X
1310.09 Quality Assurance	X	X
1310.16 Acceptable use of the State Telecommunication Network	X	X
1310.20 Internet Domain Name Service and Naming Standard	X	X
1310.34 Database Management Systems (DBMS)	N/A	X
1320.01 Public access to State information	X	X
1350 Enterprise Security	X	X
1400 Telecommunications		
1410.11 Telecommunications Requisitions Analysis Document (TRAD) Approval Process	X	X
1410.17 Michigan State Government Network Security Policy	N/A	X
1410.19 Data Exchange Gateway	N/A	X
1410.20 Client Firewall	N/A	X

Maintenance:

DMB: Acquisition Services shall not approve any acquisition or purchase request without confirmation from the Department of Information Technology, Office of Research and Policy that such request is in compliance with the standard.

Operational Unit (OU): Any and all projects, consulting requests, equipment and software acquisition requests, or ITB's relating to Interactive Voice Response (IVR) will be subject to review for compliance with this standard.

DIT:

The Office of Strategic Policy will review this standard on a continuing basis and make recommendations to changes. An appropriate group of staff, representing a wide-range of State Operational Units, will review and possibly revise these standards and guidelines as often as needed.

Exceptions from this standard for reasons other than those outlined above will be made through the exception handling process described in the Exception Process Template.
